

MUSATOV, I.I.

Photoluminescence of ice. Izv.vys.ucheb.zav.;fiz. no.2:103-104
'60. (MIRA 13:8)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.
Lomonosova.

(Ice)

(Luminescence)

S/139/60/000/004/037/044/XX
E201/E491

AUTHOR: Musatov, I.K.

TITLE: Low-Temperature Luminescence and Afterglow of
Silica Gels

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960,
No. 4, pp. 46-50

TEXT: The paper describes a detailed study of blue photo-luminescence of silica gel excited by near ultraviolet light. Apart from its intrinsic interest, a study of luminescence of silica gel may have technical applications in connection with the wide use of this substance as an adsorbent and a catalyst. Luminescence of silica gel was found to appear only after adsorption of water from gaseous or liquid phase. When silica gel was heated to 500 to 600°C, luminescence disappeared and it took a very long time to re-establish it again (by re-adsorption of water). The present paper deals with the luminescence spectra of silica gel at the temperature of liquid nitrogen and at room temperature, with the decay curve of afterglow at room temperature and with the spectrum of afterglow at -163°C. Silica gel was used in the form of powder and it was placed in a small Card 1/3

S/139/60/000/004/037/044/XX
E201/E491

Low-Temperature Luminescence and Afterglow of Silica Gels

cryostat with a quartz window. A photometer was used together with 14 interference filters. The spectra were found by comparison with a standard source (an incandescent lamp). The results obtained are shown in Figs. 1 to 4. Fig. 1 gives the luminescence spectra of silica gel at -163°C (curve 1) and at 20°C (curve 2). Cooling increased the intensity of luminescence, especially in the short-wavelength region. The maxima appeared more clearly at -163°C but their positions were unaffected by cooling from room temperature. The decay curve of total afterglow at room temperature, shown in Fig. 2, was exponential. The spectrum of afterglow at -163°C is given in Fig. 3. Within the limits of experimental error the right-hand portion of the afterglow spectrum (Fig. 3) was identical with the corresponding portion of the luminescence spectrum (curve 1 in Fig. 1). By subtracting the afterglow spectrum from curve 1 in Fig. 1 (this is done in Fig. 4) the author obtained the fluorescence spectrum at -163°C (curve a in Fig. 4). The following conclusions were drawn. 1) The exponential decay law of afterglow indicates that luminescence of silica gel is due to discrete centres. 2) The afterglow observed

Card 2/3

S/139/60/000/004/037/044/XX
E201/E491

Low-Temperature Luminescence and Afterglow of Silica Gels
at room temperature, its longer duration and higher intensity at
low temperatures, displacement of its maximum towards longer
wavelengths with respect to the fluorescence maximum, all indicate
that luminescence centres are tightly bound adsorbed water
complexes attached to the silica gel surface in at least two
points and bound to each other by hydrogen bonds. 3) The
fluorescence and afterglow of silica gel have many features in
common with complex organic dye molecules in viscous media.
There are 4 figures and 4 references: 3 Soviet and 1 English.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii
imeni M.V.Lomonosova (Moscow Institute of Fine Chemical
Engineering imeni M.V.Lomonosov)

SUBMITTED: April 28, 1959 (initially)
January 7, 1950 (after revision)

Card 3/3

TIMURDZHI, V.G.; LOBANOVA, L.S.; MUSATOV, I.Kh.; GORDEYEV, R.I.

Dynamic voltampere characteristics of silicon power rectifiers.
Sbor. nauch. trud. Elnii 3:142-150 '63. (MIRA 17:4)

MUSATOV, I.Kh.

Device for the automatic regulation of drying-ovens. Elek.1
tepl.tiaga 3 no.7:16-17 J1 '59. (MIRA 13:3)

1. Starshiy inzhener tsentral'noy laboratorii Novocherkasskogo
elektrovo-sostroitel'nogo zavoda.
(Drying apparatus)

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESS AND PROPERTIES INDEX																																																			
<i>Ca</i> The vapor-phase treatment of cracked gasolines with solid zinc chloride. K. Muzarov. <i>Nefteyama Khimiches 26</i>, No. 2, 55-57(1934).—The refining of gasoline is carried out in a tower (lab.), charged with small pieces of pumice stone (about 20 mm. in diam.). Pumice stone was found to be the best carrier. It is immersed in a $ZnCl_2$ soln. heated to 200°. Excessive heating must be avoided because of the necessity of having a reagent contg. 1 mol. of H_2O of crystn. The drying of the treated filler can be carried out in the treating tower either by passing hot air or by the cracked gasoline to be treated. In the treating process the spent $ZnCl_2$ diffuses into the pores of the pumice stone, displacing the unspent material which acts with new portions of gasoline. The lab. app. is described and illustrated. The treated gasoline is either washed with H_2O or with Na_2CO_3 and $NaOH$ solns. The treated gasoline and naphtha, with about 0.1% of the reagent, are of a satisfactory standard quality; the export gasoline, however, requires up to 0.2% $ZnCl_2$ and 0.1% Na_2CO_3. Fifty % of the $ZnCl_2$ can be recovered. The gasoline is resistant toward oxidation. A treatment with solid $ZnCl_2$ in the presence of steam is recommended if the $ZnCl_2$ was dried at an excessive temp. and also in treating heavier gasolines and naphthas. A. A. B																																																			
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION SECTION 1: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 SECTION 2: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 SECTION 3: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 SECTION 4: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52																																																			

1ST AND 2ND COLUMNS										3RD AND 4TH COLUMNS									
PROCESSES AND PROPERTIES INDEX																			
ch 72 semicommercial plant for refining cracked gasoline with solid zinc chloride. K. Munstoy. <i>Neftyanoe Khimichesko</i> 20, No. 11, 45-9(1934); cf. C. A. 28, 7503. The pressure distillate was passed through a tube still, a ZnCl₂-treating app., bubble tower, water separator, Na₂CO₃-treating unit, washing unit, settler, filter and receiver. The bubble tower was flushed with gasoline, the ZnCl₂ was heated with steam, the polymers were withdrawn through its lower section and the condensate was taken off the bottom of the bubble tower. The losses, due to the usual H₂SO₄ treatment, were thus lowered by 25-40% and the yield of the finished product was increased by 5-10%, while the consumption of ZnCl₂ amounted to 0.1% of the pressure distillate. A. A. Bochtlingk																			
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION SEARCH ONE ONE ONE SEARCH ONE ONE ONE																			

Cracking sulfurous fuel oil in presence of zinc chloride
K. A. Musatov and S. N. Solodov. *Nefteprom Khim.* 18,
No. 11, 1241 (1977); *Chemie & Industrie* 40, 667 S.
ZnCl₂ permits the cracking of heavy petroleum hydrocar-
bons containing considerable proportions of sulfurous compds.
The intensity of cracking is max. at 320-350 °C, near
the m.p. of pure anhyd. ZnCl₂. Under these conditions
broadway fuel oil yields distillates containing more than
10% of aromatics and only a small proportion of n- and
hydrocarbons. On the whole, catalytic cracking of sul-
furous fuel oils gives, according to the time of reaction,
from 20 to 50% of fractions corresponding to motor spirit
and kerosene, with a degree of desulfurization, relative
to the fuel oil, of 60-70%. A. Papineau-Couture

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSING AND PROPERTY INDEX																																																			
<i>Ch</i> Combined refining of distillates obtained in the pyrolysis of petroleum. K. A. Munstov. <i>Neftekhimicheskiy Zhurnal</i>, No. 1, 25-30. The treatment of various petroleum products was caused in part by the temp. of treatment, which is most efficient slightly below 250° or 365°, i. e., the m. p. of hydrated ZnCl₂ and of anhyd. ZnCl₂, resp. Aromatic hydrocarbons should be treated at the lower temp. to avoid the formation of carboids by condensations which accumulate on the catalyst and render it inactive. The carriers were various clays, coke, wood charcoal, pumice stone, kaolin, Al₂O₃ and Al(OH)₃, with 2% of ZnCl₂ (based on the wt. of the carrier). The best results, i. e., the greatest lowering of the consumption of H₂SO₄ in the final treatment, were observed with Al(OH)₃, Al₂O₃ and kaolin clays. Excess of ZnCl₂ clogs the pores of the carrier and causes crystn. of ZnCl₂ on the surface of the carrier. Vapors refined with ZnCl₂ must be fractionated to eliminate polymers which increase the consumption of H₂SO₄. The process uses about 2% of clay and 0.05-0.1% of ZnCl₂, based on the distillate, lowering the H₂SO₄ consumption by 75% and increasing the yield of the final product by 4-6%. A. A. Boettling																																																			
ASME 31A METALLURGICAL LITERATURE CLASSIFICATION																																																			
SEARCHED INDEXED SERIALIZED FILED																																																			

117 AND 118 (NO. 5000)

119 AND 120 (NO. 5000)

PROCESSES AND PROPERTIES INDEX

22

Vapor-phase desulfurization with sulfuric acid. K. A. Mumentov and S. S. Nifontova. *Nefteprom Khim.* 1960, No. 3, 25-27. —Concd. H_2SO_4 at temps. above 300° is a strong oxidizer of S compds. present in the gasoline and naphtha fractions of the Ishimulovo crude oil. This method is recommended in particular for the removal of the "residual" S. In this treatment about 0.3% of distillate is consumed for each part per hundred of S. The loss is made up mainly of S and aromatic mols. Of the two methods tried, that in which C is used as a catalyst has the advantage of permitting the recovery of the acid, although it is of a batch type and is characterized by a small contact space. The method of atomized acid is continuous but has the disadvantage of separating the so-called reaction "sulfo coke." Here the yields of S gas are low and give no assurance of a complete recovery of H_2SO_4 . The combined process, i. e., continuous atomization of the acid on the carbon overcomes to a great extent the disadvantages of the sep. methods. Its acid consumption is low. The S compds. in the distillate can completely be removed by the combined oxidation method of desulfurization and a liquid-phase H_2SO_4 treatment. A. A. Rezhinsk

480-554 METALLURGICAL LITERATURE CLASSIFICATION

FROM SOURCE

RECEIVED MAY 10 1961

RECEIVED ONE

RECEIVED ONE MAY 1961

Mechanism of desulfurization of petroleum distillates with zinc chloride. K. A. Musayev and L. G. Krymova. *J. Applied Chem. (U.S.S.R.)* 13, 227-34 (in French, 234) (1940).—Liquid-phase treatment of kerosene with aq. $ZnCl_2$ removed only insignificant amts. of S. The cracking properties of $ZnCl_2$ were most effective around 300° and the presence of S compds. increased its effectiveness. The desulfurization properties of $ZnCl_2$ were max. at 350°. $ZnCl_2$ decomps. mercaptans and to a considerable extent also sulfides of the paraffin and cyclic series. Thus, isobutyl sulfide was desulfurized 100%, isobutyl hydro-sulfide 98% and thiophene 22%. Wood charcoal, Al_2O_3 , (tech. $Al(OH)_3$) and $Zn(OH)_2$ were used as carriers for the $ZnCl_2$ catalyst for desulfurizing the kerosene fraction of the Leningrad petroleum (b. 180-200°) contg. sulfides 0.17, disulfides 0.31 and "residual S" 0.72%. Desulfurization at temps. below the m. p. of $ZnCl_2$ (355°) decreased the S content in the distillate to 0.18-0.36%; at that temp. H_2S did not evolve at all or evolved in small amt. (0.08%). Desulfurization above the m. p. of $ZnCl_2$ (at 370°) decreased the S content to 0.35-0.46% and increased H_2S evolution to 0.214%. At the same time and increase of HCl was 0-0.03 and 7.25%, resp. A large increase of HCl evolution at temps. above the m. p. of $ZnCl_2$ disclosed a rapid decomps. of $ZnCl_2$ at that temp.

The catalyst (on a charcoal carrier) contained (before use) $ZnCl_2$ 75, $Zn(OH)_2$ + $ZnO \cdot HCl$ + Zn_2O_3 25%; after use, $ZnCl_2$ 75, ZnS 10 and other Zn compds. 15%. At temps. above the m. p. the following reaction takes place: $ZnO + ZnCl_2 = Zn_2O_3$; therefore at that temp. the amt. of solids decreased and H_2S appeared in increasing amt. as gases. Of all the carriers used, only $Zn(OH)_2$ (tech.) and desulfurizing properties almost equal to those of $ZnCl_2$. With $Zn(OH)_2$ as a carrier, a kerosene fraction contg. 1.05% S was desulfurized to 0.37% of S (at 300°) and to 0.11% (at 380°), and mazut from 3.15% of S to 1.15% without evolution of H_2S or HCl . A. A. P.

BC

PROCESSING AND PREPARATION INDEX

Desulfurization of distillates with zinc chloride. K. A. Musayev and L. G. Kamsova (J. Appl. Chem. Russ., 1938, 12, 227-234).—S compounds are removed from petroleum products by passing the latter through a layer of $ZnCl_2 \cdot Zn(OH)_2$ catalyst at $>250^\circ$. Other carriers [C , $Al_2(SO_4)_3$, $Al(OH)_3$] are less effective.
R. T.

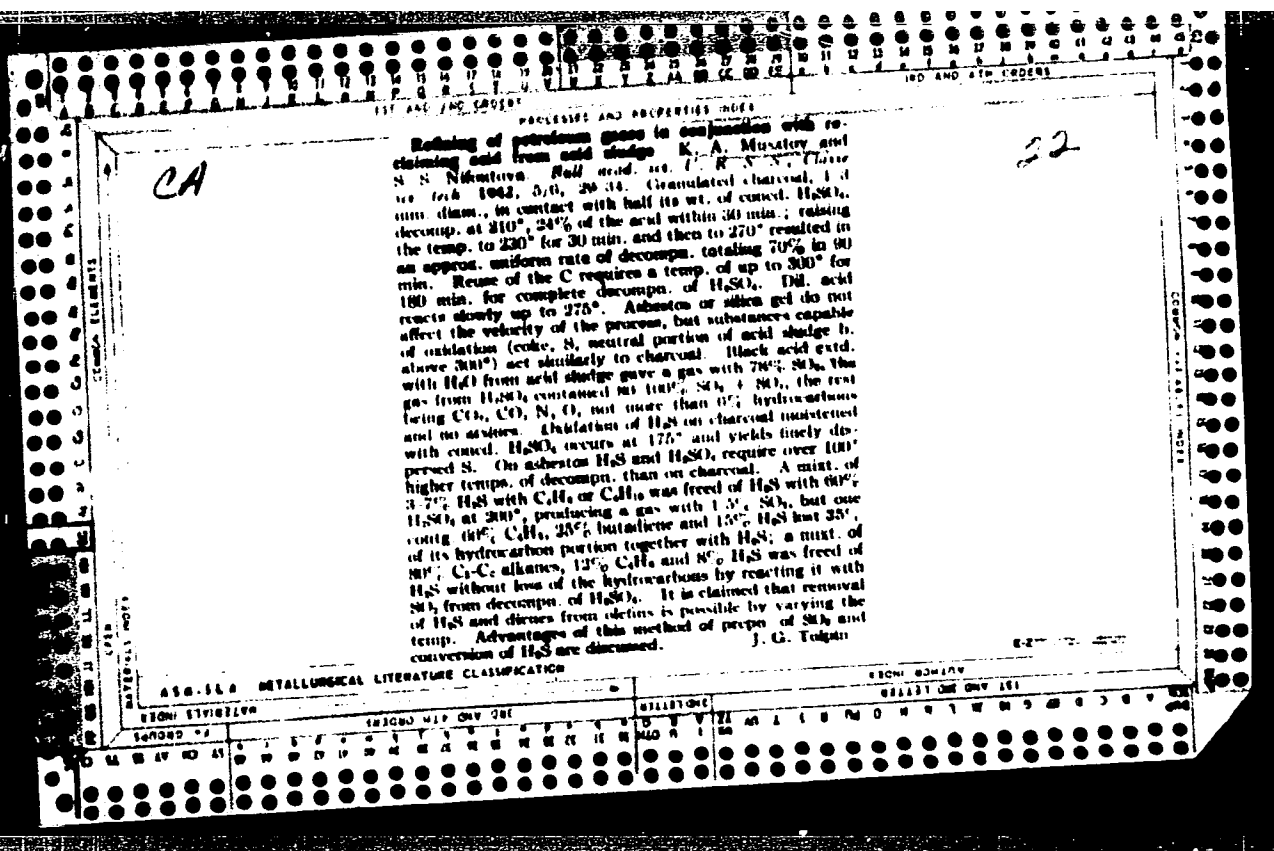
B-I-2

ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION

RECORDING

1ST AND 2ND COVER																										PROCESSES AND PROPERTIES INDEX																										3RD AND 4TH COVER																									
PCA Vapor-phase oxidation of sulfur-containing and aromatic distillates with sulfuric acid. K. A. Mynatov and S. S. Nifontova. <i>J. Applied Chem.</i> (U. S. S. R.) 13, 235-43 (in German, 243) (1940).—In oxidation of petroleum distillates with H_2SO_4, coal (and coke) analytically decompd. nonvolatile products of oxidation with the evolution of SO_2. Olefin and S compds. (in vapor state) were oxidized slightly faster than corresponding paraffin or aromatic hydrocarbons. In the presence of olefins or S compds. in amt. of 5-10% or higher, the concd. H_2SO_4 did not oxidize aromatic compds. in the vapor state if the amt. of H_2SO_4 used was less than 30-40%. Toluene and xylene were easily sulfonated with 60% H_2SO_4. All classes of S compds. were easily and rapidly oxidized with hot H_2SO_4; O-contg. compds. and polyaromatics were formed. Oxidation at high temp. of the distillate vapor with a small amt. of H_2SO_4 caused insignificant losses in distillate and converted the S compds. to such a form that the usual method of liquid-phase purification with H_2SO_4 can be used for removal of S. A. A. Potgorny																										22																																																			
ASB-11A METALLURGICAL LITERATURE CLASSIFICATION																										FROM SOURCE																																																			
1000000000																										1000000000																																																			
1000000000																										1000000000																																																			

1ST AND 2ND ORDERS										PROCESSING AND PROPERTY INDEX										3RD AND 4TH ORDERS									
CA																				22									
Desulfurizing properties of zinc hydroxide. K. A. Mamonov and L. C. Krymova. <i>J. Applied Chem. (U. S. S. R.)</i> 13, 1804-6 (in French, 1940) (1940). — Translation in <i>Foreign Petroleum Tech.</i> 9, 112-21 (1941); cf. C. A. 34, 8239; 35, 4180. — $ZnCl_2$ does not exercise a catalytic effect in the desulfurization of satd. petroleum distillates. The desulfurization is effected by $Zn(OH)_2$ and is highest with the lowest-boiling fractions, such as naphtha and gasoline. $Zn(OH)_2$ is converted into ZnS, which undergoes the following reactions: $ZnS + 3O \rightarrow ZnO + SO_2$; $ZnO + 2NH_4OH \rightarrow Zn(OH)_2 + H_2O$; $Zn(OH)_2 \rightarrow Zn(OH)_2 + 2NH_3$. The SO_2 can be utilized in the manufacture of H_2SO_4. NH_4OH is used to dissolve ZnO in the cold, and upon heating $Zn(OH)_2$ is decomposed, forming NH_3 (which can be used again) and $Zn(OH)_2$, which remains in process. The desulfurization is more efficient when carried out with $Zn(OH)_2$ than with ZnO. The desulfurization temp. with $Zn(OH)_2$ has a max. detd. by the degree of thermal disson. of the S compounds of the distillates and the ability of $Zn(OH)_2$ to be decomposed into ZnO and H_2O. The best desulfurization temp. for $Zn(OH)_2$ at atm. pressure is 360-370°; at that temp. it combines with H_2S and HCl when both are present in the vapors. A. A. R.																													
ASD-56A METALLURGICAL LITERATURE CLASSIFICATION																													
100000 NIP CHY GSE										100000 NIP CHY GSE										100000 NIP CHY GSE									



[illegible]

1ST AND 2ND CHECKS		3RD AND 4TH CHECKS	
MUSATOV K A		B-I-3	
Desulphurizing properties of zinc hydrosulfide (for light petroleum fractions). K. A. Musatov and L. G. Krymova (<i>Oil and Gas</i> /, 1962, 61, No. 3, 69). Zn(OH)_2 is an effective desulphurizing agent, working up to a max. temp. of 350-370°. It also absorbs resins and on repeated use loses its efficiency. J. W			
ASM-51A METALLURGICAL LITERATURE CLASSIFICATION			
EDWIN STYRELL	EDWIN HAY ORY GEE	EDWIN HAY ORY GEE	EDWIN HAY ORY GEE
EDWIN HAY ORY GEE	EDWIN HAY ORY GEE	EDWIN HAY ORY GEE	EDWIN HAY ORY GEE

MUSATOV, K. A. Cand. Chem. Sci.

Dissertation: "Zinc Chloride Zinc hydroxide and Aluminum sulfate in the Purification and Desulfurization of Gases and Distillates." Inst of Mineral Fuels, Acad Sci USSR, 27 Feb 47.

SO: Vechernyaya Moskva, Feb, 1947 (Project #17836)

MUSATOV, K. A.

Chemical Abst.
Vol. 48
Apr. 10, 1954
Petroleum, Lubricants, and Asphalt

Decomposition of sulfur compounds with zinc hydroxide.
K. A. Musatov, *Trudy Vses. Nauch. Akad. Nauk S.S.S.R.*
1, No. 1, 148-51 (1949).—Demulsification activity of solid
Zn(OH)₂ was tested on lab. scale by using petroleum frac-
tions rich in S, mercaptans, sulfides, disulfides, elementary
S, and cyclic compds. At 360°, mercaptans and aliphatic
sulfides were decompd. and formed ZnS, diphenyl disulfide,
lost only 25% of its S which condensed into more stable
polysulfides, thiophene did not react, and thiophane reacted
slowly. Straight-run, cracking, and reforming distillates
from crudes having a small amt. of "residual" S can be
demulsified with Zn(OH)₂. Reaction of solid Zn(OH)₂
with S and HCl and H₂S gases present in distillate vapors
can be utilized to combat corrosion of oil distilling equip-
ment. B. Z. Kargin.

MUSATOV, K.A.

299. DESULFURIZATION OF GASES AND PETROLEUM DISTILLATES BY ALUMINUM SULPHATE. Musatov, K.A. (Trudy Inst. Khim. Akad. Nauk S.S.R., 1950, vol. 1, (2), 334-335; abstr. in Inst. Petrol., Acad. Sci. U.S.S.R., 1950, vol. 1, (2), 334-335; abstr. in Chem. Abstr., 1954, vol. 48, 3(19). By passage of petroleum distillates (1)

and natural gas over anhydrous aluminum sulphate (1) at 250-500° odour, colour, and storage stability are improved. Mercaptans and hydrogen sulphide are completely removed by oxidation, diols and alcohols are partially removed, while paraffins and sulphides are unaffected. At treatment of 1 at 400° enables those sulphur compounds not removed to be more readily extracted with 2% sulphuric acid. Above 400° it causes hydrocarbons to react with free sulphur.

MUSATOV, K. A.

Refining butene from butadiene. Trudy Inst. nefti no. 6:109-115 '55.
(Butene) (Butadiene) (MLRA 8:12)

317. SUCCESSIVE EXTRACTION AND ITS APPLICATION TO DEALPHERIZATION
OF DISTILLATES OF PETROLEUM FROM THE DEVONIAN. Musatov, K.A. (Trud.
Inst. Nefti (Trans. Inst. Petrol., Acad. Sci. U.S.S.R.), 1955, vol. 6, 105-
198; abstr. in Ref. Zh. Khim. (Ref. J. Chem., Moscow), 1956, (20), 56039).
Experiments are recorded on successive extraction of fractions of Tulaazy
petroleum with phenol.

MUSATOV, K.A.

Chromatographic separation of aromatic and sulfur-bearing concentrates from kerosene. Trudy Inst.nefti 13:33-50 '59. (MIRA 13:12)
(Petroleum products) (Kerosene)

1. MYSATOV, K.D.
2. USSR (600)
4. Lignite - Yaysan Region
7. Report on the prospecting for brown coal, carried out in 1943-1944 in the region of the Yaysan Station of the Orenburg Railroad. (Abstract) Izv.Glav.upr.geol.fon. no.3 1947

9. Monthly List of Russian Accessions. Library of Congress. March 1963. Unclassified.

4
MUSATOV, L.S.

GRINOVANZ, K.I., SEZONIKH, V.V., MUSATOV, L.S., KRECHINSKIY, R.YE.,
SHERONOVA, S.N.

Measurement made in the Earth's Magnetosphere by means of Charged Particle
traps aboard the Mars 1 Probe.

Report to be submitted for the 4th International Space Science Symposium
(COSPAR) Warsaw, 2-12 June 63

L 23291-63 EMT(1)/FSF(h)/FSS-2/FS(v)-3/ENG(s)-2/FCC/ENA(d)/EEC(t) Pp-4/Ps-3/Ps-4/
ACCESSION NR: AP5001986 Pae-2/Pi-4 TI/ S/0020/64/159/006/1272/1273

GN
AUTHOR: Gringauz, K. I.; Dolginov, Sh. Sh.; Bezrukikh, V. V.; Yero-
shenko, Ye. G.; Zhuzgov, L. N.; Musatov, L. S.; Solomatina, E. K.;
Pastovskiy, U. V.

TITLE: Observations using the artificial satellite Electron-2 of the
correlation between variations of the magnetic field and streams of
positive ions inside the terrestrial magnetosphere.

SOURCE: AN SSSR. Doklady, v. 159, no. 6, 1964, 1272-1273

TOPIC TAGS: artificial satellite, magnetometer, positive ion, geomag-
netic field, magnetosphere, radiation belt, flux intensity, negative
ion, theoretical field, apogee distance

ABSTRACT: The artificial satellite Electron-2, equipped with magne-
tometers and a trap for charged particles, recorded positive ions of
all energies, their fluxes with energies of more than 100 ev, and
measured all three components of the geomagnetic field in the magneto-
sphere and at radiation belts. Recorded data showed a correlation
between the variations of the magnetic activity on the terrestrial

Card 1/2

L 23291-65
ACCESSION NR: AP5001986

surface and the intensities of fluxes of positive ions and the magnetic field far from the earth. This correlation was observed on quiet days and on days with magnetic disturbances. Numerous negative ion fluxes were recorded on magnetically quiet days. During this time, the magnetometer recorded a magnetic field of regular intensity although it exceeded the theoretical field by 20 γ. The maximum deflection from the theoretical field was detected at the apogee of the satellite. On 12 February 1964, all magnetic observatories on the earth recorded magnetic disturbances of sudden commencement while the trap in the satellite recorded positive ion fluxes exclusively of an intensity of $4 \cdot 10^{-10}$ amp. At this time the satellite was at apogee. The magnetometer recorded a rapid increase in the magnetic field. Orig. art. has: 4 figures. [EC]

ASSOCIATION: none

SUBMITTED: 15Sep64

ENCL: 00

SUB CODE: ES,SV

NO REF SOV: 003

OTHER: 008

ATD PRESS: 3173

Corr 2/2

BEZRUKEKH, V.V.; GRIGORAK, K.I.; MUSATOV, I.S.; RYCHINSKIY, K.P.; PO. KRAVY,
M.Z.

Study of solar plasma streams by means of the interplanetary station
Cond-2. Dokl. AN SSSR 263 no. 3:875-876 Az 185.

AKIRA 18:30

1. Radiotekhnicheskii Institut AN SSSR. Submitted May 11, 1985.

L 2293-66 FSS-2/ENT(1)/FS(v)-3/FCC/EWA(d)/EWA(h) TT/35/34

ACCESSION NR: AT5023612

UR/0000/65/000/000/0418/0419

AUTHOR: Bezrukikh, V. V.; Gringauz, K. I.; Musatov, L. S.; Solomatina, E. K.

TITLE: Possibility of a soft electron component in the outer radiation belt, and the variations in this component

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva, Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 418-419

TOPIC TAGS: satellite data analysis, radiation belt, electron radiation

ABSTRACT: Data are given from measurements of charged particle fluxes made by the "Elektron-2" satellite using charged particle traps. The data were obtained during passage of the satellite through the outer radiation belt in the initial stage of flight. Negative collector currents recorded in the trap varied considerably from orbit to orbit; on some orbits there were practically no negative currents. At the same time, radiation counters installed in the satellite showed a fluctuation of only 10% in the count rate for high-energy particles ($E > 100$ kev). Graphs are given that illustrate this phenomenon. The highest intensity of soft electrons in the outer radiation belt between 30 January and 17 February 1964 was $\sim 3 \cdot 10^8 \text{ cm}^{-2} \cdot \text{sec}^{-1}$.

Card 1/2

L 2993-66

ACCESSION NR: AT5023612

6
recorded on 31 January 1964. Experimental data for this period indicate that this flux is at least ten times the intensity of high-energy electrons trapped in the outer radiation belt and recorded constantly by the radiation counter. These results may be interpreted as evidence of a soft component in the electron fluxes of the outer radiation belt that varies with time to a much greater extent than does the high-energy particle flux. The soft electron region always extended beyond the outer boundary of the radiation belt. "The authors are grateful to S. N. Vernov, Yu. N. Logachev, E. N. Sosnovets, Ya. A. Benadiktov, G. G. Catmantsev, and N. A. Mityakov who kindly allowed us to study the results of their experiments before publication." Orig. art. has: 3 figures. [14]

ASSOCIATION: none

SUBMITTED: 02Sep65

ENCL: 00

SUB CODE: ES, NP

NO REF SOV: 004

OTHER: 000

ATD PRESS: 4110

Card 2/2 *hA*

L 01805-66 EWT(d)/FSS-2/EWT(1)/EEC(k)-2/FCC/EEC-4/EWA(h) TT/AST/GW

ACCESSION NR: AP5020829

UR/0020/65/163/004/0873/0876

AUTHOR: Bezrukikh, V. V.; Gringauz, K. I.; Musatov, L. S.; Rybchinskiy, R. Ye.; Khokhlov, M. Z. 55 55 55 55

TITLE: Study of solar plasma flow by the Zond-2 interplanetary station 91 89 8

SOURCE: AN SSSR. Doklady, v. 163, no. 4, 1965, 873-876

TOPIC TAGS: solar radiation, plasma measurement, plasma flow, ion trap, particle detector/Zond 2 12.55 12.55 9M

ABSTRACT: An investigation of solar plasma flow was made to confirm the hypothesis that a correlation exists between the rate of solar plasma flow and the Kp index characterizing geomagnetic disturbances. Solar plasma flow was measured by Zond-2, equipped with modulation and integral particle traps. The latter were modified to measure electron and positive ion flux with energies in excess of 70 ev and 50 ev, respectively. The modulation trap, similar to the one used on Explorer-10, had a modulating grid supplied by two voltages: a d-c voltage assuming consecutively 8 values between 230 and 3200 v,

Cord 1/3

L 01805-66

ACCESSION NR: AP5020829

and a rectangular a-c voltage of 450 v with a modulating frequency of 1000 cps. Electron emission from the collector was suppressed by a grid with a 70-v potential with respect to the body of the satellite. An alternating component of the collector current, proportional to the magnitude of the positive-ion flow, was recorded by a resonance amplifier adjusted to the modulation frequency. The instrument was capable of sensing positive ion flow within the range of 10^7 to $2.5 \times 10^9 \text{ cm}^{-2}\text{sec}^{-1}$. Recording of positive-ion flow of $E > 70 \text{ ev}$ was aided by a d-c amplifier in the trap circuit. During the flight of Zond-2, the modulation trap was directed toward the Sun. When a deviation occurred, a correction was automatically made in the readings based on a study of the angular characteristics of the trap in the laboratory. On 7 Dec 1964, solar plasma flow was recorded at $1.5 \times 10^9 \text{ cm}^{-2}\text{sec}^{-1}$, coinciding with the geomagnetic storm which occurred on the same date. This value was reached only during strong magnetic storms and tended to confirm the correlation between the K_p index and solar plasma flow. The use of particle traps capable

Card 2/3

L 01805-66

ACCESSION NR: AP5020829

of direct determination of positive-ion flow gave better results than the electrostatic analyzer on Mariner-2. Orig. art. has: 2 [TS]

ASSOCIATION: Radiotekhnicheskiy institut Akademii nauk SSSR (Radio Engineering Institute, Academy of Sciences, SSSR) 55

SUBMITTED: 29Apr65

ENCL: 00

SUB CODE: AA,SV

NO REF SOV: 002

OTHER: 006

ATD PRESS: 4085

Card

3/3

L 2885-66 FSS-2/EWT(1)/FS(v)-3/FCC/EWA(d)/EWA(h) TT/GS/GW

ACCESSION NR: AT5023603

UR/0000/65/000/000/0336/0341

AUTHOR: Gringauz, K. I.; Dolginov, Sh. Sh.; Bezrukikh, V. V.; Yeroshenko, Ye. G.; Zhurgov, L. N.; Musatov, L. S.; Solomatina, E. K.; Fastovskiy, U. V. B1

TITLE: Comparison of simultaneous measurements of magnetic field and positive ion flux within the Earth's magnetosphere recorded by the Elektron-2 satellite

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 336-341

TOPIC TAGS: space environment, ionospheric physics, electron density, ion density, earth magnetic field/Elektron 2 satellite

ABSTRACT: Measurements of charged-particle flux and magnetic field at a height of 6-11.6 R (R, Earth's radius) were made by Elektron-2. The particle trap used was capable of recording positive ion flux with ion energy in excess of the potential difference of the satellite with respect to its environment and electron flux with electron energy in excess of 100 ev. The magnetometer, with orthogonally arranged sensors, was capable of measuring the magnetic field in the range of $\pm 120 \times 10^{-8}$ erg.

1. 23. 2001

Card 1/2

L 2885-66

ACCESSION NR: AT5023603

in each component direction. Its threshold was 2×10^{-5} erg. The satellite measurements, when compared with solar activity data in the form of K_p indexes recorded via ground observatories, show inconsistencies in the correlation between the variation of magnetic activity on the Earth's surface and the variation of the geomagnetic field intensity and charged particle flux as measured by the satellite. It is uncertain whether these observations can be explained by the solar wind penetrating the magnetosphere or by near-earth plasma due to charged particles accelerated by a yet unknown mechanism. Orig. art. has: 6 figures. [2D]

ASSOCIATION: none

SUBMITTED: 02Sep65

ENCL: 00

SUB CODE: ES,SV

NO REF SOV: 003

OTHER: 006

ATD PRESS: 1109

Card 2/2

L 02977-67 FSS-2/EWT(1)/FCC TT/GW

ACC NR: AP6032856

SOURCE CODE: UR/0020/66/170/003/0570/0573

AUTHOR: Gringauz, K. I.; Bezrukikh, V. V.; Khokhlov, M. Z.; Musatov, L. S.;
Remizov, A. P.

ORG: none

TITLE: Indications that the moon traverses the Earth's magnetosphere tail,
according to data from charged-particle traps placed on the first artificial lunar
satellite

SOURCE: AN SSSR. Doklady, v. 170, no. 3, 1966, 570-573

TOPIC TAGS: magnetosphere, lunar orbit, lunar satellite, EARTH MAGNETIC FIELD

ABSTRACT: Luna-10^Y carried two flat four-electrode charged-particle traps which
monitored the flux intensity of electrons with energies exceeding 70 ev and positive
ions with energies greater than a quantity determined by the second grid voltage,
which was varied from 0 to +50 v once every two minutes. During the measurement
sessions, the trajectory of the moon and its artificial satellite was such that it
crossed the boundaries (as proposed by N. F. Ness) of the Earth's magnetosphere.
During this time the measured difference of electron ($E < e > 70$ ev) and positive
ion ($E_p > 50$ ev) flux was negative inside and positive outside the assumed boundary of
the magnetosphere. Solar activity was normal during these measurements. If the

Card 1/2

UDC: 537.591

ACC NR: AP6032856

above criterion is valid for defining the magnetosphere boundary, then the Luna-10 data indicate that the magnetosphere tail extends at least 380,000 km from the Earth. Orig. art. has: 4 figures.

SUB CODE: 03/ SUBM DATE: 11May66/ ORIG REF: 001/ OTH REF: 002/ ATD PRESS:
5099

2/2 *egh*

ACC NR: AP6034570

SOURCE CODE: UR/0020/66/170/006/1306/1309

AUTHOR: Gringauz, K. I.; Bezrukh, V. V.; Khokhlov, M. Z.; Zastenker, G. N.;
Remizov, A. P.; Musatov, L. S.

ORG: none

TITLE: Experimental results from observations of the lunar ionosphere
performed by the first artificial lunar satellite

SOURCE: AN SSSR, Doklady, v. 170, no. 6, 1966, 1306-1309

TOPIC TAGS: lunar atmosphere, ionosphere, ion trap, electron trapping,
electron flux, lunar satellite / Luna-10 lunar satellite

ABSTRACT:

In an accompanying review article on the Luna-10*, a brief description is given of the two low-energy ion and electron traps that were carried by the satellite. K. I. Gringauz et al have subsequently published a preliminary analysis of the data from these traps, and have made some tentative deductions concerning the nature of the lunar ionosphere.

One difficulty in the trap measurements has been the generally low concentration of charged particles in the lunar ionosphere. Another is the uncertainty as to what effect the unknown surface charge status of the satellite might have on the registered particle levels. It was to counter the latter effect that traps for both thermal ions and thermal electrons were installed, each with a form of square-

Card 1/7

UDC: 537.591

ACC NR: A26034570

wave gating. The ion trap had twin orthogonal elements and a common collector, as seen in Fig. 1(a); input flux was grid-modulated by a

square biasing wave, -3 to +7 v.

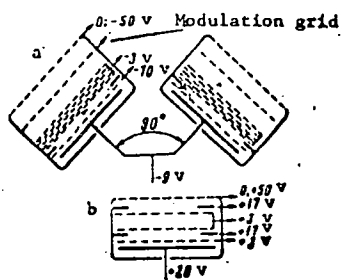


Fig. 1. Ion trap (a) and electron trap (b)

Output was detected by an amplifier tuned to this modulation frequency [unspecified]. To further overcome spurious local charge effects, the outermost grid was also modulated at 2-minute intervals by a square wave between 0 and -50 v. The electron trap outer grid was similarly modulated, but between 0 and +50 v. Interrogation of the traps was performed at 2-minute intervals. It was pointed out that rotation or tumbling of the satellite, with a period of about 40 seconds, caused "irregularity" in the measurements; this point was not elaborated on.

Card 2/7

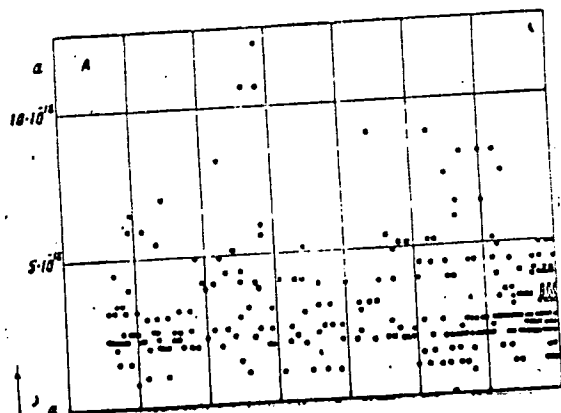
ACC NR: A26034570

Data from the ion trap have provided some idea of ion distribution in the vicinity of the Moon, but do not yield a breakdown between thermal and possibly higher energy ions. Calculated ion currents from some 450 readings are shown as a function of altitude in Fig. 2, for the general cases where the Moon was 1) within and 2) outside of the Earth's magnetosphere. A perceptible drop in ion current is seen when the Moon and its satellite entered the magnetosphere — on the average, from 3.1×10^{-12} amp to 2.3×10^{-12} amp. It also appears that there is no strong correlation of ion density with lunar altitude, nor with change in bias of the trap's external grid. If it is assumed that the ions encountered were thermal, i.e., that the satellite's orbital velocity greatly exceeded ion thermal velocities, then the calculations show a maximum ion density near the Moon of about $100/\text{cm}^3$. However, a varying component of ion flux was noted which could be correlated with solar wind flux; this fact, plus the nondependence of measured flux on altitude or grid biasing, suggest that at least part of the recorded ions were at energies well above thermal, in which case the ion density estimate would have to be revised downward.

The satellite's electron count, both in free space and in the magnetosphere, showed discrete high and low levels (Fig. 3). The

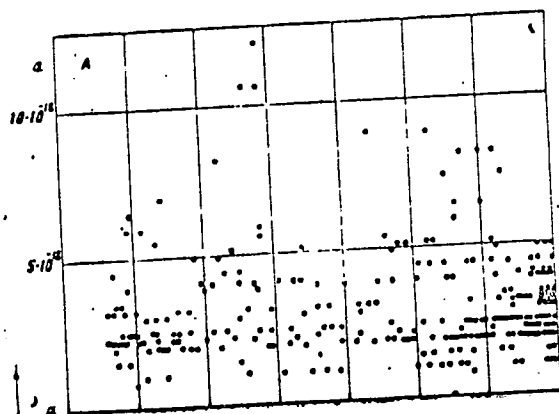
Card 3/7

ACC NR: AP6034570



Card 4/7

ACC NR: AP6034570



Card 4/7

ACC NR: AP6034570

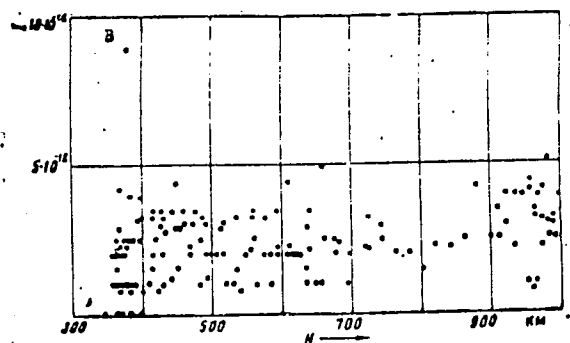


Fig. 2. I₀₀ current

A - Moon outside magnetosphere;
B - Moon within magnetosphere.

Card 5/7

ACC NR: AP6034570

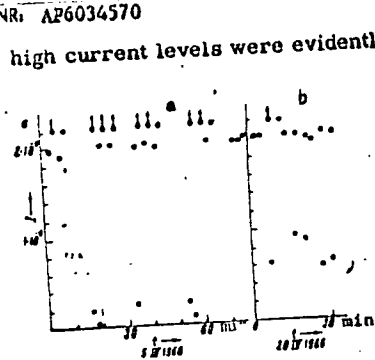


Fig. 3. Electron current

- A - Within the magnetosphere;
- B - outside the magnetosphere.

high current levels were evidently caused by photoelectrons from the satellite surface elements, since the levels dropped sharply when the satellite entered lunar night. As with the ion readings, the average electron flux was greater in free space (7.2×10^{-10} amp) than in the magnetosphere (4.8×10^{-10} amp). The corresponding densities, assuming energies on the order of 1 ev, were calculated at $80/\text{cm}^3$ and $60/\text{cm}^3$ respectively, and $15-20/\text{cm}^3$ on the lunar night side. Whereas the electron trap readings may have been erroneously increased by photoelectrons, they may also have been decreased due to interception of low-energy electrons by trap elements; laboratory tests have shown that diversion of the latter type at the 1-ev level can reduce true readings by a factor of 3 or 4. The

Card 6/7

ACC NR: AP6034570

authors intend to obtain a more accurate evaluation of these side effects and of their influence on the validity of trap readings Presented by Academician A. L. Mints on 23 June 1966. Orig. art. has: 3 figures. [FSB: v.2, no.12]

SUB. CODE: 03,20,22 / SUBM. DATE: 14Jul66 / ORIG REF: 003 / OTH REF: 006

Card 7/7

MUSATOV, M.I.

S/149/60/000/004/007/009

AUTHORS: Livanov, V.A., Kolachev, B.A., Gabidullin, R.M., Musatov, M.I.

TITLE: Distribution of Alloying Components in a Titanium Ingot Obtained by Using a Consumable Portion Electrode

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Tsvetnaya metallurgiya, 1960, No. 4, pp. 137-144 ✓

TEXT: In the preparation of titanium ingots by the method of consumable electrodes, insufficient homogeneity of the composition and of the mechanical properties was observed over the length and cross section of the ingot. A more homogeneous electrode may be obtained by splitting the titanium sponge into portions and by adding the alloying elements to each portion. If their dimensions are sufficiently small in respect to the liquid pool, the non-uniform distribution of the components in the ingot may be reduced. It may also be decreased by the method of repeated remelting. However, the heterogeneity of the ingot obtained from a portion electrode, will depend, even after repeated remelting, on the ratio of the liquid pool volume to the portion volume. The authors investigated the distribution of alloying elements in an ingot obtained from a portion electrode and determined the permissible dimensions of the portion of the electrode. Formulae are derived

Card 1/3

①

S/149/60/000/004/007/009

Distribution of Alloying Components in a Titanium Ingot Obtained by Using a Consumable Portion Electrode

for: the distribution of the alloying component over the length of an ingot obtained from a portion electrode with a non-uniformly distributed component; the distribution of the alloying component over the length of a titanium ingot after repeated remelting; the distribution of the alloying component in an electrode containing layers of pure Ti and a pure component. Figure 3 shows the distribution of an alloying component (Al) along a BT-5 (VT-5) alloy ingot calculated by the derived formulae for a case when the volume of the liquid pool is six times greater than the volume of the portion. The distribution of alloying components is non-uniform in the length and in the cross section. The found equations are used to calculate the distribution of the components after repeated remelting and it is established that this process may produce a sufficiently homogeneous material even if the components are distributed non-uniformly in the initial portion electrode, if the ratio of the liquid pool to the portion volume is sufficiently high. To carry out the quantitative verification of the formulae derived, a titanium ingot was cast of an electrode in which 5 cm layers, containing besides Ti 25% Cr-Al alloy, were pressed between 35 cm titanium layers. The volume of the liquid pool was 1/3 of the volume of one portion. The portions consisted of an alloyed and an unalloyed layer. Figure 5 shows experimental and calculated curves of the distribu-

Card 2/3

S/149/60/000/004/007/009

Distribution of Alloying Components in a Titanium Ingot Obtained by Using a Consumable Portion Electrode

tion of Cr and Al over the ingot. They are in a satisfactory agreement. The considerable non-uniformity in the distribution of Cr and Al over the ingot is caused by the fact that the size of the portions is large in respect to the volume of the liquid pool. Calculations made with the use of the described equations show that satisfactory homogeneous ingots are obtained after second remelting, if the volume of the liquid pool exceeds by three or more times the volume of one electrode portion. In this case the deviation from the rated composition does not exceed ± 0.05 . There are 1 diagram and 4 sets of graphs. ✓

ASSOCIATION: Moskovskiy aviatsionnyy tekhnologicheskii institut (Moscow Techno-
logical Aviation Institute) Kafedra metallovedeniya i tekhnologii
termicheskoy obrabotki (Department of Metallography and Technology
of Heat Treatment)

SUBMITTED: March 9, 1960

Card 3/3

S/762/61/000/000/006/029

AUTHORS: Savitskiy, Ye. M., Livanov, V. A., Nuss, P. A., Burkhanov, K. S.,
Musatov, M. I., Simanchuk, A. D.

TITLE: Alloys of titanium with rare-earth metals.

SOURCE: Titan v promyshlennosti; sbornik statey. Ed. by S. G. Glazunov.
Moscow, 1961, 85-89.

TEXT: The paper reports the results of phase-diagram (PD) determinations and mechanical tests (beginning in 1959) at the Institute of Metallurgy, AS USSR, of Ti alloys with the rare-earth metals (REM) lanthanum (La), cerium (Ce), neodymium (Nd), and Yttrium (Y), all of which serve as stabilizers of the Ti α phase. The alloys are all characterized by a peritectoid-type PD. In the Ti corner of ternary Ti-Al-La and Ti-Al-Ce it was shown that increased Al content reduced the solubility of La and Ce (at 600°C, with 5% Al, Ce solubility < 0.1%). Tests on the effect of REM additions on the high-temperature characteristics (HTC) of Ti alloys were performed on the two-phase $\alpha+\beta$ alloy BT3-1 (VT3-1) and the BT5-1 (VT5-1) single-phase α -Ti solid solution (SS). The effect of Ce, Mischmetal (MM), and Ce_2O_3 on VT3-1 were determined with 0.001, 0.01, and 0.1% Ce; 0.2% MM, and 0.01 and 0.1% Ce_2O_3 . The effect of 0.1% Ce alone was determined on VT5-1. Ce and MM were introduced in the form of Al-Ce and Al-MM ligatures. Microadditions (0.001-0.01%) of Ce increased the tensile strength of Ti alloys at 500-600° by 25-30% with-

Card 1/2

S/762/61/000/000/006/029

Alloys of titanium with rare-earth metals.

out impairing its ductility. An addition of 0.2% MM increased the tensile strength of the Ti alloy by as much as did 0.01% Ce, but with an appreciable loss in ductility. Even 0.1% Ce did not lead to the formation of any new phase; no change in room-temperature (RT) characteristics was noted, and the improved HTC cannot be explained theoretically. Microadditions of Ce_2O_3 improve the HT tensile strength of the Ti alloy tested by 20-30%, but with some loss in ductility. Passing reference is made to Grant's tests (USA; no detail given) on the hardening-phase formation of a refractory Ce-oxide segregation from the solid solution. All REM additions improved the stress-rupture HTC of VT3-1: At 500°C and 40 kg/mm², VT3-1 - 20 hrs, with 0.2% MM - 150 hrs, with 0.1% Ce_2O_3 - 125 hrs, with 0.01% Ce_2O_3 - 180 hrs, with 0.001% Ce - 77 hrs. The guarantee period for this alloy, according to Engineering Specs, is 50 hrs. The work on the effect of on the HTC of Ti alloys continues. Verification of the favorable effect of Ce on the modulus of elasticity of Ti requires additional work. Addition of 0.1% Ce enhances the HT tensile strength of VT5-1; 0.25% Ce less so and at a loss in ductility. Tests of microadditions (0.001 and 0.01%) of Ce to VT5-1 are recommended. In stress-rupture tests at 500° and 30 kg/mm², rupture of VT5-1 occurred at 130 hrs. Identical tests with VT5-1 with Ce addition produced longer, widely scattered, rupture times up to 300 hrs; the scatter is attributed to nonuniform Ce distribution in the alloy. Additional tests with more uniform Ce distribution are planned to determine an optimal Ce content. There are 4 figures; no identified references.

ASSOCIATION: None given.

Card 2/2

S/536/61/000/050/011/017
D217/D304

AUTHORS:

Livanov, V.A., Professor, Musatov, M.I., Engineer, and
Kolachev, B.A., Candidate of Technical Sciences

TITLE:

Distribution of alloying elements in a titanium ingot
produced by melting with the soluble segmented electrode

SOURCE:

Moscow. Aviatzionnyy tekhnologicheskii institut. Trudy,
no. 50, 1961, Voprosy metallovedeniya, 103-116

TEXT: The main disadvantage of Ti ingots produced by arc melting with a soluble electrode is their inhomogeneity with respect to chemical composition. By mathematical calculations, it was found that a much more uniform distribution of alloy elements along the length and cross section of ingots could be obtained by melting with a soluble segmented electrode. The relative inhomogeneity of distribution of the alloying components in such an ingot depends essentially on the ratio between the volume of the active portion of the electrode and that of the molten bath. If the ratio between the molten bath volume and the electrode volume is

1/2

Distribution of ...

S/536/61/000/050/011/017
D217/D304

sufficiently small ($V_{m.b.}/V_e < 1$), then a practically uniform distribution of alloying components along the length and cross section of the ingot will be obtained even after the first remelting process. On the other hand, if the volume of the molten bath is small, compared with that of the electrode ($V_{m.b.}/V_e > 1$), then a very inhomogeneous distribution will result which cannot be rectified even by repeated remelting. There are 9 figures and 1 Soviet-bloc reference.

Card 2/2

GRINGAUZ, K.I.; DOLGINOV, Sh.Sh.; BEZRUKIKH, V.V.; YEROSHENKO, Ye.G.;
ZHUZGOV, L.N.; MUSATOV, L.S.; SOLOMATINA, E.K.; FASTOVSKIY, E.V.

Relation between magnetic field variation and fluxes of positive
ions within the earth's magnetosphere as observed with the aid
of an Electron-2 satellite. Dokl. AN SSSR 159 no.6:1272-1275
D '64 (MIRA 18:1)

1. Predstavleno akademikom A.L. Mintsem.

L 63777-65 EMT(m)/EMP(t)/EMP(b) IJP(c) JD

ACCESSION NR: AP5017608

UR/0136/65/000/007/0081/0086
669.295:621.746.75

AUTHOR: Dobatkin, V. I.; Anoshkin, N. F.; Musatov, M. I.

TITLE: Zonal segregation in ^{44, 55}titanium alloy ingots

SOURCE: Tsvetnyye metally, no. 7, 1965, 81-86

TOPIC TAGS: zonal segregation, titanium alloy ingot, homogeneous melt, titanium rich binary system, alloy component, arc melting, consumable electrode, crystallization surface, two phase region

ABSTRACT: Contrary to the general assumption, the ^{18, 44, 55}vacuum arc melting of titanium alloy may, particularly if the ingots are bulky, involve the occurrence of zonally nonuniform chemical composition of the ingot owing to the segregative processes occurring during the crystallization of the homogeneous melt. In this connection the authors investigated the basic mechanism of these processes with the object of determining ways of producing more uniform ingots. Ingots of Ti alloys 300-850 mm in diameter, containing 6-12% Cu, Ni, Mo, Fe, and Cr, respectively, were analyzed to determine the pattern of distribution of the constituents. It was found that Ni, Cu, Cr, and Fe, which reduce the melting point in titanium-rich binary systems are present in greater amounts in the central zone of the ingots. The observed general increase in the content of alloy components in the direction from the periphery to-

Card 1/3

L 63777-65

ACCESSION NR: AP5017608

ward the center as well as from the bottom toward the top, and also the distinct dependence of the intensity and direction of the segregation on the distribution coefficient of the alloy indicate a similarity between the mechanisms of the redistribution of chemical composition in arc melting with a consumable electrode and in zone melting. However, the patterns of distribution of components in the two types of melting differ markedly. Arc melting is characterized by: a) the surface of crystallization is nearly conical compared with the plane front of crystallization in zone melting; b) the front of crystallization includes a transition region which, by changing in its dimensions, may considerably affect the nature of redistribution of the component or impurity; c) the movement of the melt is nonuniform in different parts of the molten bath. The principal measures to combat zonal segregation are: selection of optimal arc current intensities; proper selection of intensity of the magnetic field and, if the need arises, dispensing with the use of this field; increasing the cooling rate of the ingot by performing the melting in a helium atmosphere or by developing a special melting technique that assures faster cooling of the ingot. An additional way to reduce zonal segregation is to select additives that alter the character of crystallization so as to orient it in the direction of an increase in the resistance to the movement of the segregated unit in the two-phase region. Orig. art. has: 5 figures.

Card 2/3

L 63777-65

ACCESSION NR: AP5017608

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: MM

NR REF SOV: 003

OTHER: 001

llc
Card 3/3

ACC NR: AP6017960 (A)

SOURCE CODE: UR/0413/66/000/010/0034/0034

INVENTORS: Morozov, Ye. I.; Musatov, M. I.; Zhiznev, V. S.

ORG: none

TITLE: A method for pouring molten metal from lined vacuum arc furnaces. Class 18, No. 181668

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 10, 1966, 34

TOPIC TAGS: metallurgy, metallurgic process, metallurgic furnace, metal industry, arc furnace

ABSTRACT: This Author Certificate presents a method for pouring molten metal from lined vacuum arc furnaces. To obtain a superheated melt, the pouring is done through an intermediate crucible in which the metal is reheated by an auxiliary electric arc.

SUB CODE: 13/ SUBM DATE: 06Jul64

Card 1/1

UDC: 621.745.56

KAL'MANOVICH, Z.Z., inzhener; MUSATOV, N.V., inzhener.

Expanding the use of VOM-2M combines in the mines of the Moscow basin.
Ugol' 28 no.6:30-32 Je '53. (MLBA 6:6)
(Moscow Basin--Coal-mining machinery)

1. MUSATOV, S.
2. USSR (600)
4. Potatoes
7. How we obtained 458.5 tsentners of potatoes per hectare. Dest. sel'khoz. no.3, 1952
9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

MUSATOV, S.

Twelfth session of the U.N. Economic Commission for Asia and the
Far East. Vnesh.torg. 26 no.5:4-7 My '56. (MLBA 9:8)
(United Nations--Commissions)
(Bangalore, India--Commerce--Congresses)

MUSATOV, T. P.

USSR/Electricity
Transmission Lines
Insulators

Dec 48

"Mass Ignition of Towers From Leakage Currents," V. P. Kovalenko,
T. P. Musatov, Engineers, 1½ pp

"Elek Stants" No 12

Describes 21 cases of ignition of wooden "π"-shaped towers from leakage currents in 1946 in a southern regional network. Cases occurred in sections not exposed to contamination from industrial enterprises, majority during wet months. Analysis showed that dust accumulated in insulators during prolonged dry spell. Dust was composed of 40% organic impurities, 50% sand, and 10% limestone. Light rain was insufficient to wash insulators but increased leakage currents. Recommends coating poles with fireproof, current-conducting material, and shunting danger points of towers by metal bands.

PA 54/49T38

MUSATOV, T. P.

"Mass Ignition of Towers from Leakage Currents," Elek. Stan., No. 12, 1948;

"The Use of Live Tubular Connectors as Lugs for Aluminum Stranded Cable," ibid.,

No. 1, 1949;

"Water Formation in Inductors, Expanders, and Cable Boxes of Power Transformers," ibid.,

No. 2, 1949; "Supplimentary Grounds of Power Transformer Casings," ibid., No. 3, 1949;

"Checking the Working Voltage of the Cut-off Coils of Circuit Breakers," ibid.,

No. 7, 1949; "Technical Training for Operational Personnel on Electric Power Networks,"

ibid., No. 8, 1949; "Vibrations of Conductors in Sleet Regions," ibid., No. 11, 1949;

"Use of Flexible Links for High-Amperage Connections," ibid., No. 5, 1950.

1ST AND 2ND CODES										3RD AND 4TH CODES									
PROCESSES AND PROPERTIES INDEX																			
SA 564 1955. Water condensation in buildings, distillers and other heating boxes of power transformers. <i>MURPHY, T. P. Electr. Engr. 38 (No. 2) 41-4 (1949) In Russian.</i>—Intensive condensation or precipitation of water in electrical plant with an enclosed air volume is mainly due to insufficiently hermetic sealing. Moreover, in view of the serious danger to the parts of electric machinery by water deposition, an exchange of the air volume inside the machines with careful exclusion of atmospheric precipitation is imperative. Where this is not advisable, periodic testing of the hermetic sealing or installation of a vacuum meter is necessary. <i>D. V. K.</i> 621.514.3: 621.315.687																			
ASTM 31.4 METALLURGICAL LITERATURE CLASSIFICATION																			

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																										5TH AND 6TH ORDERS																									
1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																										5TH AND 6TH ORDERS																									
SA 3079. Testing of the operating voltage of the tripping coils of a circuit-breaker. <i>Izvestiya, T. P. Khark. St., 20, 33-4 (July, 1967) In Russian.</i> Failure to trip of an imported 95 kV circuit-breaker on a 110 kV substation led to an investigation and to revision of circuit-breaker testing regulations. It is suggested that the "testing voltage" should be 65% of the rated operating voltage, to allow for deterioration during service. This "testing voltage" of the tripping coils is defined as the min. voltage at which the mechanism completes its operation, though at a reduced speed of the movement of the armature of the relay. It represents a measure of the power reserve available at the rated operating voltage and at the lower limit of the operating voltage. S. V. K.																																																																													
ASB-SL-6 METALLURGICAL LITERATURE CLASSIFICATION																																																																													

MUSATOV, T. P.

23194 O proverke napryakheniya srabatyvaniya otklyuchayushchikh katushek
byklyuchatelya. Elektr. Stantsii, 1949, No. 7, c. 33-34.

SO: LETOPIS' NO. 31, 1949.

MUSATOV, T. P.

PA 161T22

USSR/Electricity - Power, Electric May 50
Transmission Lines

"Use of Flexible Links for High-Amperage Connections," T. P. Musatov, Engr, 1½ p

"Elek Stants" No 5

Subject links are used extensively in USSR power systems, especially in the Donbass. Important to see that sag does not exceed half the distance between wires of different phases; otherwise short circuits may occur.

161T22

MUSATOV, T.P., Eng.; ZAPOROZHETS, B.I., Eng.

Electric Circuit Breakers

Reconstructing inlets of oil circuit breakers VM-25. Rab. energ., 1, No. 2, 1951.

Monthly List of Russian Accessions, Library of Congress, October 1952. Unclassified.

USSR/Electricity - Substations, High-Voltage
Telemechanics Jul 51

"Automation and Telemechanization of High-Voltage System Substations," T. P. Musatov, A. K. Martynyuk, Engineers

"Rabochiy Energetik" No 7, pp 13-16

Describes the pulse-time telemechanization system VMT-48, developed by the Gen Sci Lab, Min of Elec Power Stations and produced by the "Energo-detal'" plant. This system can be used for telemechanization of 35-kv distribution substations either from dispatcher points or from the main 110-220-kv
2067149

USSR/Electricity - Substations, High-Voltage (Contd) Jul 51

substations. Telemechanization of a substation includes (1) remote control, (2) remote signaling, and (3) telemetering.

MUSATOV, T. P.

2067149

MUSATOV, T. P.

Electric Engineering

Rules pertaining to the setting up of electric
installations. Elektrichestvo, No. 1, 1952.

Inzh. Donbassenergo

SO: Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

MUSATOV, T. P.

Electric Substations

Operating remote control substations. *Stab. energ.* 2 no. 4, 1952.

Monthly List of Russian Accessions, Library of Congress, July 1952. UNCLASSIFIED.

MARTYNYUK, A. K.: MUSATOV, T. P.

Electric Relays

Operations of an ET relay with separate winding connections. Elek. sta., 23,
No. 5, 1952.

Monthly List of Russian Accessions, Library of Congress, October 1952 UNCLASSIFIED

MUSATOV, T. P., Eng.; YUROVSKIY, G. SH., Eng.

Electric Insulators and Insulation

Damage to insulation on high-power transformer
leadouts. Elek. sta., 23, No. 6, 1952.

Monthly List of Russian Accessions, Library of Congress, October 1952. UNCLASSIFIED.

MUSATOV, T. P., ENG.

Electric Insulators and Insulation

Damage in testing porcelain rods on distributors. Elek. sta. 23, no. 8, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952. Unclassified.

MUSATOV, T.P., inzhener.

Clutch release device for the starting motor of a synchronous compensator.
(MLRA 6:10)

Energetik 3 no.5:12 0 '53.

(Electric machinery, Synchronous)

MUSATOV, T. P.

PA 255T66

USSR/Electricity - Literature, Mar 53
Synchronous Compensators

"Review of Ye. Ya. Gurevich's Book 'Operation
of Synchronous Compensators,'" Engr T. P.
Musatov

Elek Sta, No. 3, p 64

Reviewer emphasizes usefulness of Gurevich's
book ("Eksplotatsiya sinkhronnykh
kompensatorov," 200 pp, Gosenergoizdat, 1952)
for personnel concerned with maintenance of
synchronous compensators, which are termed

255T66

necessary for normal power-system operation
and are also used in industrial enterprises.
Book covers design, operation, maintenance,
repair of compensators.

TERNIKOV, P. V. Eng., MUSATOV, T. P. Eng., CHERNYSHEVICH, V. I. Eng., TEDORENKO, N. I. Eng.

Electric Relays

Disconnecting charging and load currents by means of relays. Elek. sta. 22 No. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

MUSATOV, T.P., inzhener.

Analysis of damage on electric transmission lines caused by lightning.
Elek.sta. 24 no.4:46-48 Ap '53.

(MLBA 6:5)

(EEA 56 no.670:3983 '53)

(Electric lines)

MUSATOV, T.P., inzhener; KOVALENKO, V.P., inzhener.

Connecting powerful synchronous compensators without drying. Elektrichestvo
no. 8:59-60 Ag '57. (MLRA 6:8)

(Electric transformers)

ZAPOROZHETS, B.I., inzhener; MUSATOV, T.P., inzhener.

Device for blocking mobile grounding devices. Elek.sta. 24 no.9:39-40 S '53.
(~~MLRA~~ 6:8)

(Electric currents--Grounding)

MARTYNYUK, A.K., inzhener; MUSATOV, T.P., inzhener; GRUDINSKIY, P.G.; LEBEDEVA, V.I.

Electric circuit scheme in the form of a "rectangle." Elek.sta. 24 no.11:43-
46 H '53. (MIRA 6:11)

(Electric circuits)

MUSATOV, T.P., inzhener.

Organization structure of an electric network. Elek.sta. 25
no.1:37-38 Ja '54. (MLRA 7:1)
(Electric networks)

MUSATOV, T.P.

NIKOLAYEVA, N.V., inzhener; PAMYATNYKH, A.S., inzhener; MUSATOV, T.P.,
inzhener; MAKHMUROV, L.D., inzhener; DANYELIAN, G.E., inzhener;
IOFFE, E.F., inzhener; GRUZDEV, A.V., inzhener; KLEMENT'YEV, D.P.,
inzhener; MOS'KIN, V.S., inzhener.

On the organization of service for district substations. Elek.
sta.25 no.2:36-42 F '54. (MLRA 7:2)

1. Azenergo (for Nikolayeva, Pamyatnykh and Makhmurov).
2. Donbassenergo (for Musatov and Danyelian). 3. Mosenergo (for
Klement'yev). 4. Gorenergo (for Ioffe, Gruzdev and Mos'kin).
(Electric substations)

MUSATOV, T.P., inshener.

Distribution of line and installation points on electric transmission lines. Elek.sta. 25 no.10:39-40 0 '54. (MLRA 7:11)
(Electric lines--Overhead)

MUSATOV, T. P.

Subject : USSR/Electricity AID P - 1632
Card 1/1 Pub. 29 - 14/23
Author : Musatov, T. P., Eng.
Title : Defects in compound-filled bushings of the VM-35
circuit breakers of the Sachsenwerke Plant
Periodical : Energetik, 3, 1, 22, Ja 1955
Abstract : Describing various shortcomings in 35 kv circuit breakers
bushings of VM-25, VM-35, MKP-35 and VMD-35 type of the
Sachsenwerke Plant, the author gives some preventive
failure measures.
Institution: Technical Administration of the Ministry of Electric
Power Plants
Submitted : No date

Energetik, 10, 28-29, 0 1955

AID P - 3406

Card 2/2 Pub. 29 - 21/30

Institution : None

Submitted : No date

ABSTRACT

Subject : USSR/Electricity AID P - 3716
Card 1/1 Pub. 29 - 21/25
Authors : Musatov, T. P., Eng. and A. S. Pisochina
Title : Response to the article by A. A. Chervonenkov:
"Classifying and simplifying technical report forms
used by industrial electric laboratories"
Periodical : Energetik, 12, 26, D 1955
Abstract : Both authors agree on the importance of systematizing
and simplifying technical documentation in electric
laboratories, and suggest certain improvements and
modifications based on their own experience.
Institution : None
Submitted : No date

MUSATOV, T.P.

MUSATOV, T.P., inzhener; NAUMOVSKIY, L.D., inzhener; IOFFE, Ye.F.,
inzhener; POBEGAYLO, K.M., inzhener; KUZMIN, Ya.F., inzhener;
VASIL'YEV, A.A., inzhener.

On permanent markings on the supports of electric transmission
lines. Elek. sta. 26 no.1:43-45 Ja '55. (MIRA 8:3)
(Electric lines--Overhead)

MUSATOV, T.P.

KUDRYASHOV, S.A., inzhener.

Remarks on engineer T.P. Musatov's article "Protective cable of
a 110 kv two-wire line." Elek. sta. 26 no.1:58 Ja '55.

(Electric cables)(Musatov, T.P.)

(MLRA 8:3)

RYTSLIN, A.M., inzhener; BLAGONADEZHDI, V.M., inzhener; KNYAZEVSKIY, B.A.,
inzhener; VOL'FSON, I.V., inzhener; MUSATOV, T.P., inzhener; IOFFE,
Ye.F., inzhener

Volume of instructions and operating papers for electric substations.
Elek.sta. 26 no.5:37-43 My '55. (MIRA 8:7)

1. Makeyevskiy setevoy rayon Donbassenergo (f. Rytslin).
2. Elektroseti Kuybyshevenergo (f. Blagonadeshdin). 3. VVS
Mosenergo (f. Knyazevskiy). 4. VVS Kirovenergo (f. Vol'fson).
5. Stalinskiy setevoy rayon Donbassenergo. 6. Gorenergo (f.
Ioffe). (Electric substations)

AID P - 1395

Subject : USSR/Electricity

Card 1/1 Pub. 26 - 22/30

Author : Musatov, T. P., Eng.

Title : Transmission lines crossing railway tracks

Periodical : Elek. Sta., 2, 56, F 1955

Abstract : The author is concerned with the particular case of high-voltage lines crossing railway tracks near stations where frequent manouvering of the steam locomotive under the lines may contribute to their soiling and eventual damaging . Existing rules to that effect should be revised in cooperation with the interested ministries.

Institution: None

Submitted : No date

MUSATOV, T. P.

AID P - 2412

Subject : USSR/Electricity

Card 1/1 Pub. 26 - 11/33

Authors : Rytslin, A. M., Donbass Power System
Blagonadezhdin, V. M., Kuybyshev Power System
Knyazevskiy, B. A., Moscow Power System
Vol'fson, I. B., Kirov Power System
Musatov, T. P., Donbass Power System
Ioffe, Ye. F., Gor'kiy Power System

Title : Discussions on the volume of instructions and operational documentation for power substations

Periodical : Elek sta 5, 37-43, My 1955

Abstract : The article refers to an article by Eng. G. B. Yakusha published in this periodical (No. 10, 1953) and gives a summarized account of opinions and answers received from readers. The subject of the discussion is the documentation involved in the operation of substations. The need for standard instructions and a decrease in the amount of paper work is stressed by all correspondents.

Institution: None

Submitted : No date

А963А766, 7 1'

MUSATOV, T.P., inzhener

Reclamation of transformer oil with high dielectric losses. Energetik
3 no.10:28-29 0'55.

(MLRA 8:12)

(Insulating oils)

MUSATOV, T.P., inzhener

Closed distribution equipment in excessively dirty areas. Elek.
sta.26 no.10:53-55 0 '55. (MIRA 8:12)
(Electric substations) (Electric insulators and insulation)

MUSATOV, T.P., inzhener.

**Technical study room in the area of a distribution network. Elek.
sta. 27 no.2:58-59 P '56. (MIRA 9:6)
(Electric engineering)**

MUSATOV, T.P., inzhener.

Step-down transformer substations with bus-tie switches. Elek. sta.
27 no.10:42-43 O '56. (MIRA 9:12)
(Electric substations) (Electric switchgear)

MUSATOV, T.P., inzhener.

Apparatus for hoisting the removable part of transformers in substations.
Elek.sta.27 no.6:59-60 Ja '56. (MIRA 9:9)
(Electric transformers) (Cranes, derricks, etc.)

MUSATOV, T.P., inzhener.

New time intervals for the inspection of transmission lines.

Energetik 4 no.12:4 D '56.

(WLRA 10:1)

(Electric lines)

MUSATOV, T.P.

MUSATOV, T.P., inzhener; KOVALENKO, V.P., inzhener.

Control of the connections of steel and aluminum leads of the
open part of a high-voltage substation. Energetik 5 no.8:31
Ag '57. (MLRA 10:10)

(Electric substations)